

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
6 May 2005 (06.05.2005)

PCT

(10) International Publication Number  
**WO 2005/040560 A1**

(51) International Patent Classification<sup>7</sup>:  
17/16, 17/14

F01D 9/02,

(74) Agent: CABINET ORES; 36, rue de St-Petersbourg,  
F-75008 Paris (FR).

(21) International Application Number:

PCT/IB2003/005142

(22) International Filing Date: 24 October 2003 (24.10.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant (for all designated States except US): **HONEYWELL INTERNATIONAL INC** [US/US]; 101 Columbia Road, Morristown, NJ 07962 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ROBERTS, Quentin** [GB/FR]; 16bis quai Jules Ferry, F-88000 Epinal (FR). **BERNARDINI, Luciano** [IT/FR]; 13, rue de la Forêt, F-88390 Uxegney (FR). **LOMBARD, Alain** [FR/FR]; 1, Lotissement les Bergeronnettes, F-88390 Uxegney (FR). **PETITJEAN, Dominique** [FR/FR]; 11, route du Bourbet, F-88120 Julienrupt (FR). **LOTTERMAN, Jeff** [US/US]; 2267 Priscilla Street, St. Paul, MN 55108 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

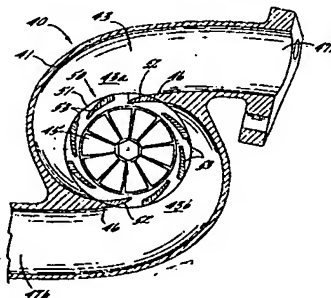
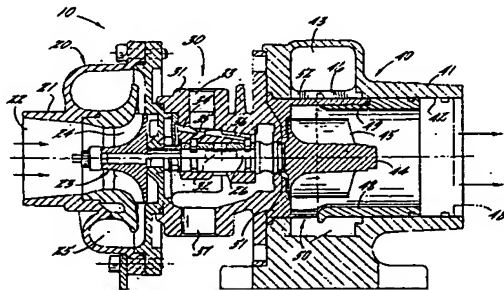
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SECTOR-DIVIDED TURBINE ASSEMBLY WITH AXIAL PISTON VARIABLE-GEOMETRY MECHANISM



(57) Abstract: A turbine (40) for a turbocharger (10) has a turbine housing (41) defining a generally annular chamber (43) surrounding a turbine wheel (44), the chamber receiving exhaust gas for driving the turbine wheel. The chamber has dividing walls (46) that divide the chamber into a plurality of angular sectors (43a, 43b), each fed with exhaust gas separately from the other sector(s). Vanes (52, 53) located radially inwardly of the sectors for guiding flow into the turbine wheel include at least dividing vanes (52) that form extensions of the dividing walls (46) so as to extend the sector-division of the exhaust gas flow path all the way to the trailing edges of the dividing vanes. An axially slidable piston (48) is disposed radially inwardly of the sectors, and radially overlaps with the dividing vanes (52). The vanes either are mounted on fixed structure and are received in slots (49) in the piston, or are mounted on the piston and received in slots in fixed structure.

WO 2005/040560 A1